PATENT CLAIMS

1. A rotating electric machine for high voltage comprising a stator, a rotor and windings,
characterized in that at least one winding comprises one or more current-carrying conductor (2), wherein around each conductor there is arranged an inner layer with semiconducting properties and around the inner layer there is arranged a solid insulating part and around the insulating part there is arranged an outer layer with semiconducting properties.

2. A rotating electric machine according to claim 1, characterized in that the inner semiconducting layer is arranged in such a way that it is at substantially the same potential as the conductor.

3. A rotating electric machine according to claim 1 or 2, characterized in that the outer semiconducting layer is arranged in such a way that it essentially constitutes an equipotential surface surrounding the conductor/conductors.

4. A rotating electric machine according to claim 3, characterized in that the outer semiconducting layer is connected to a chosen potential.

5. A rotating electric machine according to claim 4, characterized in that the chosen potential is earth potential.

6. A rotating electric machine according to claim 4, characterized in that a separate potential can be chosen for each separate winding.

7. A rotating electric machine according to claim 1, 2, 3, 4,5 or 6, characterized in that at least one of said semiconducting layers has substantially the same coefficient of thermal expansion as the insulating part.

8. A rotating electric machine according to any of the preceding claims, characterized in that the current-carrying conductor comprises a number of strands, said strands being insulated from each other, except a few strands that are uninsultated in order to secure electric contact with the inner semiconducting layer.

9. A rotating electric machine according to any of the preceding claims, characterized in that all the semiconducting layers disposed around the conductor are secured to the adjacent insulating part along essentially the whole of its contact surface.

10. A rotating electric machine with a magnetic circuit for high voltage comprising a magnetic core and a winding, characterized in that the winding comprises a cable comprising
one or more current-carrying conductor (2),
each conductor comprises a number of strands,
around each strand there is arranged an inner semiconducting layer (3),
around which is arranged an insulating layer (4) of solid, extruded insulation, around which is arranged an outer semiconducting layer (5).

11. A rotating electric machine for high voltage according to claim 10, characterized in that the cable also comprises a metal shield and a sheath.

12. A rotating electric machine for high voltage according to claim 10, characterized in that a magnetic circuit is arranged in the stator and/or the rotor of the rotating electric machine.

13. A rotating electric machine for high voltage according to claim 10 or 11, characterized in that the outer

semiconducting layer (5) is cut off into a number of parts which are separately connected to earth potential.

14. A rotating electric machine for high voltage according to claim 5, 10, 11, 12, or 13, characterized in that, with connection of the outer semiconducting layer to earth potential, the electric field of the machine outside the semiconducting layer both in the slots and in the end winding region will be near zero.

15. A rotating electric machine for high voltage according to claim 10 - 14, characterized in that, when the cable comprises several conductors, these are transposed.

16. A rotating electric machine for high voltage according to claim 10-14, characterized in that the current-carrying conductor/conductors (2) comprise both non-insulated and insulated wires, stranded into a number of layers.

17. A rotating electric machine for high voltage according to claim 10-14, characterized in that the current-carrying conductor/conductors (2) comprise both non-insulated and insulated strands, transposed into a number of layers.

18. A rotating electric machine for high voltage according to any one of the preceding claims, characterized in that the slots (10) are formed as a number of cylindrical openings (12), extending axially and radially outside one another, with a substantially circular cross section separated by a narrower waist portion (13) between the cylindrical openings.

19. A rotating electric machine with a magnetic circuit for high voltage according to claim 17, characterized in that the substantially circular cross section of the cylindrical openings (12) of the slots, counting from a yoke portion (8) of the laminated core, is designed with a continuously decreasing radius.

20. A rotating electric machine with a magnetic circuit for high voltage according to claim 17, characterized in that the substantially circular cross section of the cylindrical openings (12) of the slots, counting from a yoke portion (8) of the laminated core, is designed with a discontinuously decreasing radius.

21. A rotating electric machine for high voltage comprising a stator, a rotor and windings, characterized in that at least one winding comprises one or more coils and that the current-carrying conductors included in each coil are surrounded by insulation and that around the insulation which surrounds the conductor/conductors there is arranged an outer layer constituting an equipotential surface surrounding the conductor/conductors at both the coil side and the coil end.

22. A rotating electric machine according to any of claims 1 - 21, characterized in that the rotating electric machine is connectable to one or more system voltage levels.

23. A rotating electric machine according to claim 22, characterized in that one winding is provided with separate tappings for connection to different system voltage levels.

24. A rotating electric machine according to claim 22 or 23, characterized in that for a connection to a system voltage level there is provided a separate winding.

25. A rotating electric machine according to claim 22, 23 or 24, characterized in that via the rotating electric machine exchange of electric energy between two or more electrical systems of different voltages, is allowed for.

26. A method for manufacturing a rotating electric machine comprising a magnetic core comprising slots, channels and the like, wherein these slots have at least one opening

accessible from the outside of the magnetic core, and windings, characterized in that at least one winding is threaded into the opening such that the winding is formed while being mounted.

27. A method for manufacturing a magnetic circuit for a rotating electric machine, wherein the magnetic circuit is arranged in the stator and/or the rotor of the electric machine, which magnetic circuit comprises a magnetic core (8) with slots (10) for a winding (1) and wherein the slots are formed as cylindrical openings (12), extending axially and radially outside one another, with a substantially circular cross section, and that the method is characterized in that the winding comprises a cable which is threaded in the cylindrical openings.

28. Use of a rotating electric machine according to any of the preceding claims, characterized in that the machine can be operated with up to 100% overload for a period of time exceeding 15 minutes and up to about two hours.

29. Use of a rotating electric machine according to any of the preceding claims, characterized in that the rotating electric machine is directly connected to a power network via
connecting devices and without an intermediate transformer between the machine and the network.

30. Use of a rotating electric machine according to any of claims 1- 25, characterized in that voltage regulation of the rotating electric machine is performed by control of the magnetic field flow through the rotor.

31. Use of a rotating electric machine according to any of claim 1- 25 , characterized in that the machine can be operated without mechanical load and that the machine is

provided for compensation of inductive or capacitive load on the network.